

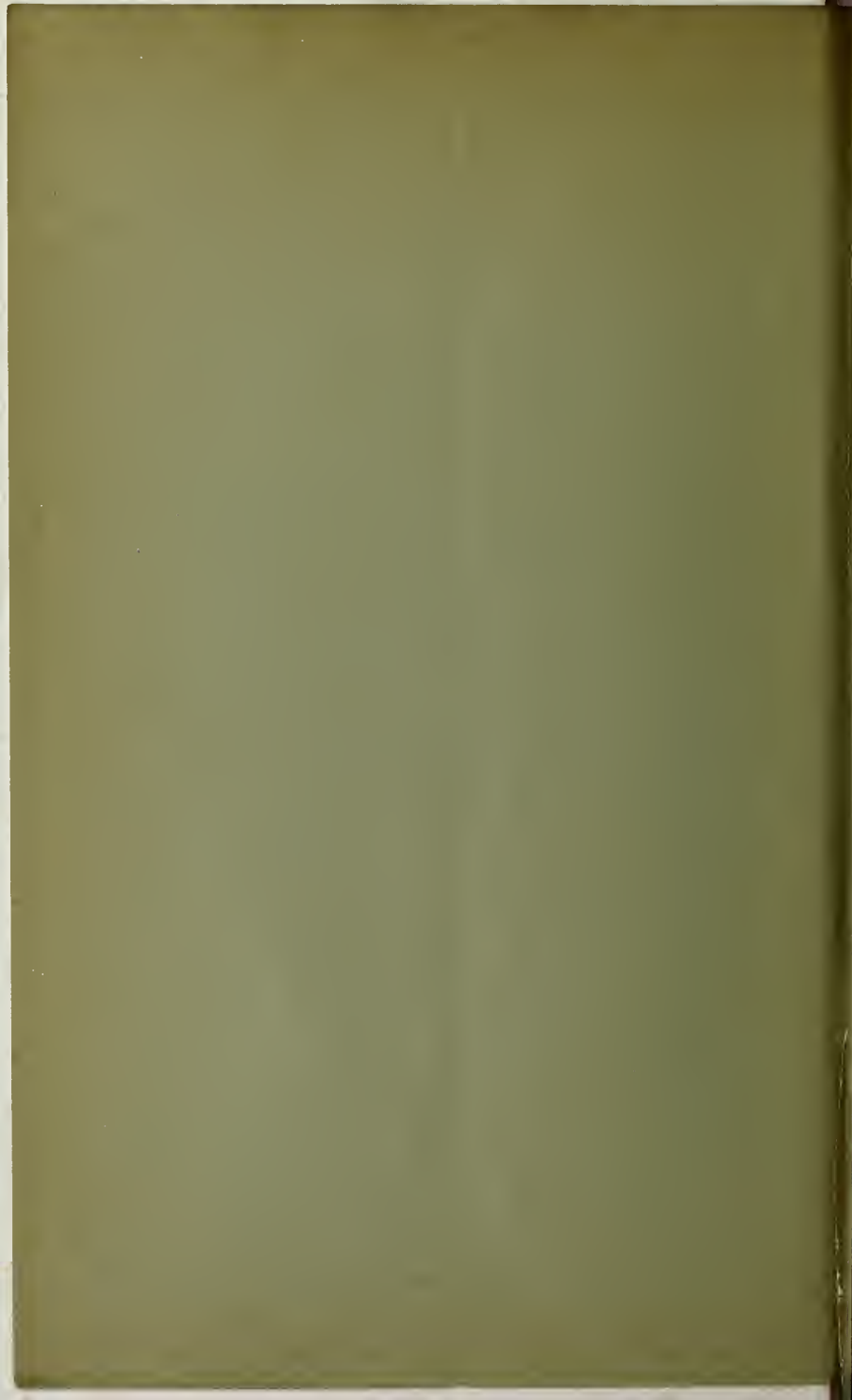
THE PRESENT POSITION OF
OPHTHALMIC SCIENCE
AND ART.

BY
D. B. ST. JOHN ROOSA, M.D.,
NEW YORK.

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Reprint from the MEDICAL RECORD,
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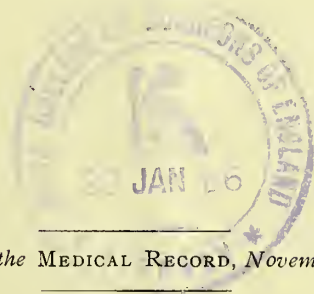
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THE PRESENT POSITION OF OPHTHALMIC SCIENCE AND ART.*

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OPHTHALMOLOGY is one of the oldest of the specialties of our science and art. That it is properly so, has been almost unanimously acknowledged by the profession from the beginning of the time when surgeon oculists began to exist, which may be said to be, in round numbers, perhaps one hundred years ago. Since then, and especially in the last fifty years, ophthalmology has grown so luxuriantly in its various fields, that it has become subdivided, in some few instances, as a specialty. Here and there, members of the profession have devoted themselves almost exclusively to the correction of defective vision by the adjustment of glasses, while inflammatory conditions, or infections, and those requiring operation, have been passed on to others, who, in their turn, paid relatively little attention to optical defects. An attempt has also been made by some manufacturing opticians in various parts of the world, without an education in general medicine, to assume the care of all the conditions of the eye requiring glasses. In this State they have sought legislation to constitute a separate professional class, and yet this class of opticians has never contributed anything at all essential to our knowledge of the conditions of the eye requiring glasses, or to that pertaining to the character of lenses to be used.

*Read before the Medical Society of the State of New York, October 16, 1901.

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Such a subdivision, either in the profession or out of it, if generally made, would be detrimental to the interests of the public, and, on this ground, should never become a system of practice. The specialties in medicine have reached, perhaps, their utmost limit. There will be always a large rank and file of all-round men of the first order, and those who are at work in special departments should be able, when necessity occur, to become fair general practitioners. Our ideal practitioner is not one who knows a great deal of one thing and nothing at all of others; but, rather, one who knows a great deal of many things, and who must devote himself to some special investigations for the greatest good of the greatest number.

But I may not dwell on this interesting inquiry of how far "specialism" is beneficial to the human race, and what limits should be put to it. I pass on to the subject of the hour, and I propose to inquire with you, How stands now ophthalmic science and art, since its great masters—those who placed it in the van of the progress of medicine—are gone? Mackenzie, Sichel, Donders, Graefe, Arlt, Jaeger, Horner, Desmarres, Bowman, Critchett, Wilde; in our own country, the two Williamses, Agnew, Loring, Noyes, and many others, an enumeration of whose names is a recognition of their great service to the race. How have they left the field, has all the needful work been done by them, and have we reached a point where we simply cultivate plants, already well grounded in a soil well prepared by our predecessors? Our answer to all this must be qualified. There are certain departments of ophthalmology in which no essential advance or discovery has been made in the last twenty-five years. After Helmholtz gave us the ophthalmoscope, if we had stopped with his plane mirror, difficult to manage, and not to compare with the simple instrument of Liebreich and his contemporaries, we should have been handicapped with an

imperfect method of examination. All that Helmholtz did—but what a mighty *all*—was to provide us a means—imperfect it is true, but a means—for doing that, which was hitherto impossible—of examining with tolerable but not complete ease the retina, the choroid, the vitreous, the lens, and the optic papilla.

Until this time, while here and there were even exhibitions of luminous eyes, no one found out the means of making them so, and the principle of optics upon which this illumination depended. One of our own number, Edward G. Loring, gave us the final contribution to ophthalmoscopy—an instrument by which we could thoroughly and easily determine the refraction of the eye. The tilting mirror, suggested by Wadsworth of Boston, made a perfect instrument, as it remains to this day. If no modifications had ever been made since these two men gave us the perfected instrument, ophthalmology would have lost nothing of importance which may be revealed by an ophthalmic mirror. Yet, no sooner was Loring's ophthalmoscope announced and described, than modifications and alterations, chiefly of a trivial character, began, and none but the tilting mirror was important.

Helmholtz also invented the instrument for measuring the radius of the cornea—the ophthalmometer. Helmholtz first did the thing, and gave us the instrument by which an expert in a laboratory, with plenty of time at his disposal, could make a corneal measurement. Valuable results came from the use of this ophthalmometer, or keratometer, as perhaps it should be called. One of our own members, Knapp, with Donders, was the first to avail himself of the instrument as then presented, as well as Dyer, in this country.

But these arduous labors were scarcely ever repeated, and the ophthalmometer of Helmholtz passed

into the limbo of unused inventions until, after many years of research and trial, Javal, a French Alsatian, and Schiotz, his Norwegian assistant, at the Sorbonne in 1881, gave us an instrument by which an ordinary practitioner, after a few hours of experience, under a teacher, may, in two or three minutes, accurately determine the vertical, horizontal, or oblique radius of curvature of the human cornea. Here, also, the work of modification immediately began. But, as after Loring the ophthalmoscope was invented, so the ophthalmometer, as left by Javal, remains entirely satisfactory for its important purposes. The general use of the ophthalmometer is rapidly simplifying our methods of determining the proper glasses to be worn by those who have marked optical defects. I say "marked" advisedly, because we have learned that many departures from a so-called normal condition may exist, without any necessity for the wearing of glasses. The ophthalmometer does its great work because, on the very threshold of our investigations of the refraction of the eye, it quickly determines that which was formerly difficult but always important to learn—the presence or absence of corneal astigmatism of any degree, high or low.

If we consider the present condition of inflammatory affections of the conjunctiva and cornea, while it is not at all certain that a greater number of cases are cured than under the old methods, which still retain their usefulness, certainly our knowledge has become much more exact since the discoveries of Lister and Koch and Weeks, and we have learned of aseptics and antiseptics and bacilli, and we know why we use silver nitrate and copper sulphate, and so on. We had been using antiseptic remedies without knowing exactly in what specific way they acted, if, indeed, we are now sure. As has been intimated, nitrate of silver, sulphate of copper, alum for the conjunctiva, and carbolic acid for the cornea were

used long before the present supposed principle of their action was known probably with as great success. The ophthalmia of the new-born, however, now receives immediate and rational treatment, and the frequency of the continuation of the infection has been very much diminished by Credé's investigations.

In trachoma, the mechanical treatment has made a great advance in our means of relief. We have also learned the contagiousness of all conjunctival affections, as we did not know it before. A United States examining surgeon will now send back a European immigrant affected with trachoma, realizing, as he does, the importance of not spreading this condition, so likely to be destructive to sight. The writer of this discourse actually encountered, on a vessel going to Liverpool, through the courtesy of the ship's doctor, two Finns, who had been wisely rejected by our authorities as not being proper immigrants to enter this country, because they were affected with trachoma, which, to the credit of the American examining officer be it said, could not be detected except by a thorough turning over of the upper lid by a little manipulation not always easily accomplished, except by an expert.

A great advance has been made in the treatment of myopia of a high degree by the invention of the method of lessening the refraction of the eye by removal of the lens. Very high degrees of myopia, as is well known, are so disabling as to be worthy of relief in this manner. From my own observation, in Swiss and German hospitals, I judge there are more cases in those countries of such degrees of myopia than in France, England, or our own country.

In the matter of strabismus, advance has been slow, and not widely spread. We are not yet fully in the open. This, I am inclined to think, is due, in some part, to the excessive zeal and enthusiasm exercised

by those, especially in our own country, who were led astray by the astonishing revelations of the value of glasses in hypermetropia and astigmatism. A large class of people, up to the time of Donders, were, except in isolated cases, left without aid to their vision, although the means of relief were actually at their side, though unseen. These enthusiasts, going very far beyond the masters, beside the cure of headaches and defective eyesight, found in errors of refraction the source of epilepsy, idiocy, chorea, and a great number of diseases of the nervous system. They claimed that "difficulties attending the functions of accommodation and adjusting the eyes in the acts of vision, or irritations arising from the nerves involved in the process, are among the most prolific sources of nervous disturbances." Driven from their untenable position by the exact observations of those who followed them, they took refuge in a position in which they are still in some force. Again, I say, *especially* in this country. The claim now made in certain quarters is that in the want of exact equilibrium of the eyes, very often latent and only to be determined by a measurement of the power of given muscles, at certain times, is to be found the source of a large class of diseases, whose origin has been hitherto unsuspected. This later theory of the great importance of a latent defect has been much disturbed by measurements of people in good health, without asthenopia, who were found to have exactly the same conditions that were supposed to do so much harm. But the results of the practice of division and partial division of the ocular muscles for the relief of these conditions, which were often unsuspected by the patient, and only with difficulty to be determined by the observer, soon excited grave doubts as to whether, after all, the whole human economy depends on the question of the action of the muscles of the eyeball. And all this,

as I have intimated, led to a neglect of the study of a positive condition, strabismus, a deformity which leads not only to blunting of the vision of one of the eyes, as now may, I think, be safely said, but also produces a marked deformity, which gives rise to great mental trouble to many of those affected with it, and gives them a distressing appearance to the observer. But in our time this is being studied, and we are moving toward positive rules of action, although much diversity of sentiment exists as to the proper methods of operating.

Javal and Panas in Paris, and their followers in this country, have done very much to rescue this subject from the field of mistaken conclusions in which it was left by Graefe, and which were increased a thousand-fold by mistaken zealots in this country. The study of so-called "latent squint," and of concealed irregularities and deficiencies in the action of the ocular muscles, has delayed very much what is, I hope, before us for its relief, in Javal's methods of obviating the necessity for operations in many cases, and Panas's rational operations when necessary. We are now much more sure of what we can do, and that is to restore the normal position of the eyes, and, in rare cases, to secure binocular single vision.

The mistaken conclusions of Dieffenbach, who first proposed operative means for the relief of strabismus about fifty-five years ago, led to sanguine hopes which could not be realized, for the deformity was supposed to depend upon something morbid in the muscle. This, at the most, we now know to be a spastic condition, while the origin of strabismus, as Donders endeavored to show, is found in fixed conditions of the eyeball.

In senile cataract, we have made most satisfactory advance. Formerly operators, as distinguished and skilful as Graefe, Arlt, Desmarres, Agnew, and Williams, might perform ideal removals of the lens,

in the best technique of the time, and yet suppuration and destruction of the eye result. After the general introduction of Graefe's narrow knife, instead of the old broad instrument, the percentage of losses was sensibly diminished. But, until aseptic treatment was fully understood and practised, and a local anæsthetic, cocaine, provided by Koller, the most bitter disappointment often befell the most skilful operators. Now, that the instruments can be so cleansed that they are incapable of carrying infectious disease, and the dressings made absolutely aseptic, and the eye made perfectly insensible to the pain of the operation, the cases of suppuration have diminished to such an extent that a patient in fair health, with cataract, has better chances of a good result, with an operator of average skill, who is exact in his aseptic technique, than he formerly had in the hands of the most renowned operators of the world, when the causes of failure to heal the wound by "first intention" were utterly unknown, and when the patient might ruin his eye by his own movement during the operation, or in the vomiting from the effects of the ether.

In the matter of after-treatment of the capsule, and of iridectomy coincidental with the corneal sections, much of interest remains to be said to specialists. Here the most diverse opinions are still held. No common ground has been reached, and much remains to be done before we are agreed on all these points. But this we may say, that the chances of good vision in our time have been raised from, say, 60 per cent. to 90 per cent., by cocaine, the narrow knife, and aseptic treatment of the dressings, the instruments, and the eye.

We are also in an advanced position in the matter of operative procedures for the removal of iron and steel foreign bodies. The use of the magnet, first, the smaller ones, and, finally, the great one, invented

by Haab of Zurich, have greatly facilitated these removals. In what proportion of cases, after the thorough removal of the septic body, it may still destroy the eye, remains to be shown. For the entrance of a foreign body into the eyeball, through the ciliary region, in spite of its thorough removal, will generally involve the loss of the eye as complete as that of a plate of glass when broken by a stone. But the removal of the foreign body, without great damage to the tissues in the process, gives us hope that we may lessen the cases of complete loss, and, better still, perhaps, of sympathetic iridochoroiditis.

The questions of the complete or partial enucleation of the eye for cosmetic purposes, or the prevention of sympathetic inflammation, the use of glass balls, and the like, as a substitute for the vitreous humor, are still widely discussed; but there exists no doubt in any mind that the eyeball must be, as to its principal part, promptly removed, should it be in danger of exciting sympathetic inflammation. The discovery, by Bonnet, of the method of enucleation of one eye for the relief of the other, however it may be done, still has the complete sanction of the profession. This, of itself, has been a tremendous advance.

In acute glaucoma, the same triumphs are achieved to-day as when Graefe first operated on the Berlin shoemaker. But when we come to speak of chronic glaucoma, we have a disease which may be mitigated, and whose advance may be delayed, but whose cure, as yet, remains usually impossible. While thousands of patients have testified by their rescue from blindness to the value of iridectomy in the acute form, yet it is only a few years since a New York surgical teacher considered the removal of a piece of iris, for glaucoma, as senseless an operation as would be the removal of a part of the peritoneum for peritonitis. It is only with a patient with an

insidious narrowing field of vision, intermittent attacks of increased tension without pain, that we are tossed on a sea of doubt, in spite of the value of iridectomy in acute disease. It is possible that much remains to be done in the classification of what may be called "non-inflammatory glaucoma," and the new operation of removing the cervical ganglion of the sympathetic nerve is worthy of a fair trial.

Thanks to the thousands of investigators, and the excellent drawings of many of them, our knowledge of interior ocular accidents and infections—retinitis hæmorrhagica, retinitis syphilitica, optic neuritis, chorioiditis, atrophy of the optic nerves—becomes more and more exact. But this knowledge does not, in every case, lead to hopes of cure. Detachment of the retina, probably always, except in traumatic cases, preceded by diseases of the choroid and vitreous, remains disastrous and incurable. Advance here must be looked for in prevention of the condition which makes detachment possible.

It is useless to hope that all disease is to be cured, or, as I should rather say, prevented in our time, whatever future ages may have in store for the human race. But we all admit that an exact and thorough diagnosis mitigates much of even incurable disease, and ultimately leads to better results. Certain it is, that in no department of our science and art are there more brilliant results of cure and relief by mechanical and operative interference than in what is known as ophthalmology.

With advantages much less than those to be obtained on the Continent of Europe, we, in this country, have made a good showing in the progress of the last fifty years. Could there be secured to us in the large cities better facilities for more exact and thorough observations, without regard to the pressing claims of private practice, much more would be achieved in American laboratories, hospitals, and infirmaries.